

## CLAIMS

What is claimed is:

1        1. In a spread-spectrum receiver, a method for processing a received analog spread-spectrum signal,  
2 comprising:  
3        determining whether to attenuate the received analog spread-spectrum signal;  
4        based on the attenuation determination, selectively attenuating the received analog spread-spectrum  
5 signal to generate a selectively attenuated analog spread-spectrum signal;  
6        digitizing the selectively attenuated analog spread-spectrum signal to generate a digital spread-  
7 spectrum signal;  
8        filtering the digital spread-spectrum signal in an attempt to compensate for interference in the  
9 received analog spread-spectrum signal to generate a filtered digital spread-spectrum signal; and  
10       de-spreading the filtered digital spread-spectrum signal to generate a de-spread digital signal, wherein  
11 the attenuation determination is based on the amplitude of the digital spread-spectrum signal prior to the  
12 interference-compensation filtering and the de-spreading.

1       2. The invention of claim 1, wherein the filtering attempts to compensate for off-channel  
2 interference in the received analog spread-spectrum signal.

1       3. The invention of claim 1, wherein the selectively attenuated analog spread-spectrum signal has a  
2 negative signal-to-noise ratio (SNR).

1       4. The invention of claim 1, wherein:  
2       the received analog spread-spectrum signal is attenuated when the amplitude of the digital spread-  
3 spectrum signal is greater than an upper threshold; and  
4       the received analog spread-spectrum signal is not attenuated when the amplitude of the digital  
5 spread-spectrum signal is less than a lower threshold, wherein the upper threshold is greater than the  
6 lower threshold.

1       5. The invention of claim 4, wherein the upper threshold is greater than the lower threshold by an  
2 amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation  
3 determination.

1       6. The invention of claim 1, wherein:  
2       the received analog spread-spectrum signal is a radio frequency (RF) signal; and

3 further comprising:

4 converting the RF signal to an intermediate frequency (IF) prior to the digitization; and

5 converting the IF signal to baseband after digitization.

1 7. The invention of claim 6, wherein the filtering and the de-spreading are implemented at  
2 baseband.

1 8. The invention of claim 1, wherein:

2 the filtering attempts to compensate for off-channel interference in the received analog spread-  
3 spectrum signal;

4 the selectively attenuated analog spread-spectrum signal has a negative signal-to-noise ratio (SNR);

5 the received analog spread-spectrum signal is attenuated when the amplitude of the digital spread-  
6 spectrum signal is greater than an upper threshold;

7 the received analog spread-spectrum signal is not attenuated when the amplitude of the digital  
8 spread-spectrum signal is less than a lower threshold;

9 the upper threshold is greater than the lower threshold by an amount greater than the level of  
10 selective attenuation in order to provide hysteresis in the attenuation determination;

11 the received analog spread-spectrum signal is a radio frequency (RF) signal;

12 further comprising:

13 converting the RF signal to an intermediate frequency (IF) prior to the digitization; and

14 converting the IF signal to baseband after digitization; and

15 the filtering and the de-spreading are implemented at baseband.

1 9. A spread-spectrum receiver, comprising:

2 a variable attenuator adapted to selectively attenuate a received analog spread-spectrum signal to  
3 generate a selectively attenuated analog spread-spectrum signal;

4 an analog-to-digital converter (ADC) adapted to digitize the selectively attenuated analog spread-  
5 spectrum signal to generate a digital spread-spectrum signal;

6 an interference-compensation filter adapted to filter the digital spread-spectrum signal in an attempt  
7 to compensate for interference in the received analog spread-spectrum signal to generate a filtered digital  
8 spread-spectrum signal;

9 a digital processor adapted to de-spread the filtered digital spread-spectrum signal to generate a de-  
10 spread digital signal; and

11 a controller adapted to control the variable attenuator based on the amplitude of the digital spread-  
12 spectrum signal prior to the interference-compensation filter and the digital processor.

1 10. The invention of claim 9, wherein the filter is adapted to attempt to compensate for off-channel  
2 interference in the received analog spread-spectrum signal.

1 11. The invention of claim 9, wherein the selectively attenuated analog spread-spectrum signal has a  
2 negative signal-to-noise ratio (SNR).

1 12. The invention of claim 9, wherein:  
2 the controller is adapted to control the variable attenuator to attenuate the received analog spread-  
3 spectrum signal when the amplitude of the digital spread-spectrum signal is greater than an upper  
4 threshold; and  
5 the controller is adapted to control the variable attenuator not to attenuate the received analog spread-  
6 spectrum signal when the amplitude of the digital spread-spectrum signal is less than a lower threshold,  
7 wherein the upper threshold is greater than the lower threshold.

1 13. The invention of claim 12, wherein the upper threshold is greater than the lower threshold by an  
2 amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation  
3 determination.

1 14. The invention of claim 9, wherein:  
2 the received analog spread-spectrum signal is a radio frequency (RF) signal; and  
3 further comprising:  
4 a mixer adapted to convert the RF signal to an intermediate frequency (IF) prior to the  
5 digitization; and  
6 a digital downconverter adapted to convert the IF signal to baseband after digitization.

1 15. The invention of claim 14, wherein the filter and the digital processor are adapted to operate at  
2 baseband.

1 16. The invention of claim 9, wherein:  
2 the filter is adapted to attempt to compensate for off-channel interference in the received analog  
3 spread-spectrum signal;

4 the selectively attenuated analog spread-spectrum signal has a negative signal-to-noise ratio (SNR);  
5 the controller is adapted to control the variable attenuator to attenuate the received analog spread-  
6 spectrum signal when the amplitude of the digital spread-spectrum signal is greater than an upper  
7 threshold;  
8 the controller is adapted to control the variable attenuator not to attenuate the received analog spread-  
9 spectrum signal when the amplitude of the digital spread-spectrum signal is less than a lower threshold;  
10 the upper threshold is greater than the lower threshold by an amount greater than the level of  
11 selective attenuation in order to provide hysteresis in the attenuation determination;  
12 the received analog spread-spectrum signal is a radio frequency (RF) signal;  
13 further comprising:  
14 a mixer adapted to convert the RF signal to an intermediate frequency (IF) prior to the  
15 digitization; and  
16 a digital downconverter adapted to convert the IF signal to baseband after digitization; and  
17 the filter and the digital processor are adapted to operate at baseband.